

What is claimed is:

1. A voltage detection circuit comprising:

a first transistor and a second transistor that have emitters thereof connected together to form a differential pair;

a voltage division circuit that divides an input voltage into a first division voltage and a second division voltage, the voltage division circuit being connected directly to a base of the first transistor to apply the first division voltage to the base of the first transistor, the voltage division circuit being connected directly to a base of the second transistor to apply the second division voltage to the base of the second transistor; and

a resistor that has one end thereof connected to the base of the second transistor and that has another end thereof connected to the emitter of the second transistor,

wherein whether the input voltage is equal to a predetermined level or not is checked based on an output from the differential pair.

2. A voltage detection circuit as claimed in claim 1,

wherein the first and second transistors are both of a PNP type.

3. A voltage detection circuit as claimed in claim 2,

wherein the voltage division circuit includes:

a serial circuit composed of a rectifying element and a first resistor;

a second resistor; and

a third resistor, and

wherein the input voltage is applied to one end of the serial circuit, another end of the serial circuit is connected to one end of the second resistor, another end of the second resistor is connected to one end of the third resistor, another end of the third resistor is connected to ground, the first division voltage is outputted from a node between the serial circuit and the second resistor, and the second division voltage is outputted from a node between the second resistor and the third resistor.

4. A voltage detection circuit as claimed in claim 3,

wherein, when the input voltage is equal to the predetermined voltage, a voltage across the rectifying element is equal to a base-emitter voltage of the second transistor.

5. A voltage detection circuit as claimed in claim 4,

wherein the predetermined voltage is equal to a sum of a first multiplication product and a second multiplication product,

the first multiplication product being a product obtained by multiplying

a differential voltage between a base-emitter voltage of the first transistor and the base-emitter voltage of the second transistor as observed when the differential pair is in a state of equilibrium

by

a value obtained by dividing a sum of resistances of the first, second, and third resistors by the resistance of the second resistor,

the second multiplication product being a product obtained by multiplying

the base-emitter voltage of the second transistor

by

a value obtained by dividing a sum of the resistance of the third resistor and a resistance of the resistor by the resistance of the resistor.

6. A voltage detection circuit as claimed in claim 1, further comprising:  
an output transistor that is turned on and off according to an output from the differential pair,

wherein the voltage detection circuit outputs as a reset signal an output of the output transistor.

7. A semiconductor integrated circuit device including a voltage detection circuit, the voltage detection circuit comprising:

a first transistor and a second transistor that have emitters thereof connected together to form a differential pair;

a voltage division circuit that divides an input voltage into a first division voltage and a second division voltage, the voltage division circuit being connected directly to a base of the first transistor to apply the first division voltage to the base of the first transistor, the voltage division circuit being connected directly to a base of the second transistor to apply the second division voltage to the base of the second transistor; and

a resistor that has one end thereof connected to the base of the second transistor and that has another end thereof connected to the emitter of the second transistor,

wherein whether the input voltage is equal to a predetermined level or not is

checked based on an output from the differential pair.

8. A semiconductor integrated circuit device as claimed in claim 7, wherein the first and second transistors are both PNP-type transistors.

9. A semiconductor integrated circuit device as claimed in claim 8, wherein the voltage division circuit includes:

a serial circuit composed of a rectifying element and a first resistor;  
a second resistor; and  
a third resistor, and

wherein the input voltage is applied to one end of the serial circuit, another end of the serial circuit is connected to one end of the second resistor, another end of the second resistor is connected to one end of the third resistor, another end of the third resistor is connected to ground, the first division voltage is outputted from a node between the serial circuit and the second resistor, and the second division voltage is outputted from a node between the second resistor and the third resistor.

10. A semiconductor integrated circuit device as claimed in claim 9, wherein, when the input voltage is equal to the predetermined voltage, a voltage across the rectifying element is equal to a base-emitter voltage of the second transistor.

11. A semiconductor integrated circuit device as claimed in claim 10, wherein the predetermined voltage is equal to a sum of a first multiplication

product and a second multiplication product,

the first multiplication product being a product obtained by multiplying  
a differential voltage between a base-emitter voltage of the first transistor and the base-emitter voltage of the second transistor as observed when the differential pair is in a state of equilibrium

by

a value obtained by dividing a sum of resistances of the first, second, and third resistors by the resistance of the second resistor,

the second multiplication product being a product obtained by multiplying  
the base-emitter voltage of the second transistor

by

a value obtained by dividing a sum of the resistance of the third resistor and a resistance of the resistor by the resistance of the resistor.

12. A semiconductor integrated circuit device as claimed in claim 7, further comprising:

an output transistor that is turned on and off according to an output from the differential pair,

wherein the semiconductor integrated circuit device outputs as a reset signal an output of the output transistor.

13. A method for fabricating a semiconductor integrated circuit device, the semiconductor integrated circuit device including a voltage detection circuit,

the voltage detection circuit comprising:

a first transistor and a second transistor, both of a PNP type, that have emitters thereof connected together to form a differential pair;

a voltage division circuit including a serial circuit composed of a rectifying element and a first resistor, a second resistor, and a third resistor, the voltage division circuit dividing an input voltage into a first division voltage and a second division voltage, the voltage division circuit being connected directly to a base of the first transistor to apply the first division voltage to the base of the first transistor, the voltage division circuit being connected directly to a base of the second transistor to apply the second division voltage to the base of the second transistor; and

a resistor that has one end thereof connected to the base of the second transistor and that has another end thereof connected to the emitter of the second transistor,

wherein whether the input voltage is equal to a predetermined level or not is checked based on an output from the differential pair, and

wherein the input voltage is applied to one end of the serial circuit, another end of the serial circuit is connected to one end of the second resistor, another end of the second resistor is connected to one end of the third resistor, another end of the third resistor is connected to ground, the first division voltage is outputted from a node between the serial circuit and the second resistor, and the second division voltage is outputted from a node between the second resistor and the third resistor,

the method comprising a step of forming the resistor, the first resistor, the

second resistor, and the third resistor simultaneously by a same process.

14. A method for fabricating a semiconductor integrated circuit device as claimed in claim 13,

wherein the semiconductor integrated circuit device is so configured that, when the input voltage is equal to the predetermined voltage, a voltage across the rectifying element is equal to a base-emitter voltage of the second transistor.

15. A method for fabricating a semiconductor integrated circuit device as claimed in claim 14,

wherein the semiconductor integrated circuit device is so configured that the predetermined voltage is equal to a sum of a first multiplication product and a second multiplication product,

the first multiplication product being a product obtained by multiplying

a differential voltage between a base-emitter voltage of the first transistor and the base-emitter voltage of the second transistor as observed when the differential pair is in a state of equilibrium

by

a value obtained by dividing a sum of resistances of the first, second, and third resistors by the resistance of the second resistor,

the second multiplication product being a product obtained by multiplying

the base-emitter voltage of the second transistor

by

a value obtained by dividing a sum of the resistance of the third

resistor and a resistance of the resistor by the resistance of the resistor.